CITY OF LODI

COUNCIL COMMUNICATION

AGENDA TITLE: Authorize City Manager to sign Agreement with the San Joaquin Valley Unified Air Pollution Control District for Installation of Compressed Natural Gas Fueling Station.

MEETING DATE: December 18, 1996

PREPARED BY: Assistant to the City Manager

RECOMMENDED ACTION: That City Council authorize the City Manager to sign the attached agreement with the San Joaquin Valley Unified Air Pollution Control District for installation of a Compressed Natural Gas Fueling Station.

BACKGROUND INFORMATION: On April 10, 1996, City Council authorized the City Manager to submit a grant application to the San Joaquin Valley Unified Air Pollution Control District for the purchase of a CNG fueling station and an electric bus. The electric bus application was denied. However, the City of Lodi succeeded in its application for the CNG fueling station, and has been awarded $96,800. The District requires the City to enter into an agreement (attached) to perform all activities and work necessary to install the station.

The actual conversion of the buses to CNG fuel use will be financed through a $95,000 Petroleum Violation Escrow Account grant which is coordinated by the California Energy Commission. The Assistant to the City Manager is currently researching CNG conversion systems which will operate on five new 22 passenger Startrans buses recently purchased for the GrapeLine transit system. A system is available.

All capital costs associated with this project will be borne by outside granting agencies. There will be some costs associated with training City mechanics to maintain these conversion systems, but these should be more than offset by reduced maintenance costs. CNG vehicles require fewer oil changes and experience less engine component wear. Gasoline is ridiculously cheap for the City of Lodi at the present time ($0.8813 per gallon). Nevertheless, CNG remains less expensive and may be obtained for $0.66 or less per gallon equivalent. The net fiscal effect will be very beneficial for GrapeLine.

Other project benefits include - significantly reduced emissions, less dependence on foreign oil imports, less need for use of underground storage tanks and encouragement of other agencies to convert to CNG.

FUNDING: All funding for the fuel station will be derived from a San Joaquin Valley Unified Air Pollution Control District "REMOVE" grant ($96,800).
All funding for CNG conversion will be derived from a Petroleum Violation Escrow Account grant ($95,000).

Kirk J. Evans
Assistant to the City Manager

APPROVED: _____
H. Dixon Flynn -- City Manager

CADDET Energy Efficient Analysis Report No.5

Natural Gas as a Vehicle Fuel

[Home] | [Contents] | [List of Analysis Reports]

Vehicles using compressed natural gas (NGVs) benefit from lower running costs and reduced emissions. Surprisingly its use is only prevalent in a few countries, despite recent technological advances that have made installation easier, such as the development of lightweight on-vehicle storage cylinders.

Given a favourable economic and technical climate, the success of NGVs depends on government support at both local and national level. Based on field experience, this CADDET analysis report assesses the benefits and costs of introducing NGVs and tries to overcome uncertainties associated with the fuel's promotion and ignorance of its potential.

Although dedicated natural gas engines are now available, much of the present industry is concerned with retrofit engine and vehicle conversion, often with the petrol fuel system retained as a back-up. The report deals in some detail with the technical aspects of vehicle conversion including dual-fuel operation for diesel engines. The limitations imposed by the cost and weight of on-board fuel storage are examined, as are questions of refuelling facilities, maintenance and safety.

Considerable attention is paid to the advantages of natural gas over other hydrocarbon vehicle fuels in terms of emissions levels. Various engine control strategies are considered and emissions test results given.

 Last modified 8 February 1996.

Energy Efficiency Project

Compressed natural gas alternative fuel programme in Florida

Location : Sunrise, Florida; United States of America

Project Description
- General Description
- Technical data
- Performance data
- Energy data
- Environmental data
- Economic data
- Keywords
- Project Details

Related data
- Organisations
- Documents

Project Description

General Description

The Compressed Natural Gas Alternative Fuel Programme was reintroduced in Sunrise, Florida, as a long-term project after a brief but successful trial programme. It created the necessary infrastructure to support the use of vehicles operating on compressed natural gas (CNG) and other alternative fuels. CNG is less expensive and cleaner burning than gasoline, which allows the City of Sunrise to save money while helping to preserve Florida's fragile environment. The programme was made possible through substantial financial commitment from both city and state agencies.

This project has received a "Best in Category" Award from the U.S. Department of Energy's National Awards Programme for Energy Efficiency and Renewable Energy in 1995.

Technical Data

From 1991 to 1994, several public natural gas refueling facilities have been built and more and more cars have been converted to run on CNG, as a result of the programme.

In 1991, a public natural gas refuelling station was opened in Sunrise - the first in the southeastern United States - with a USD 233,000 State of Florida Energy Grant. At that time, Sunrise had only two city vehicles and two private vehicles that ran on natural gas. That wasn't the case for long, however. The Energy Grants, along with matching city funds, also provided funds to begin converting vehicles and purchase factory- dedicated vehicles that operate on CNG. To realize the greatest fuel savings and environmental benefits, the programme targeted city vehicles that used the most fuel - the Police Department. Initially, a single police car was converted to run on both gasoline and natural gas. The car was monitored over a test period, and the results were positive. Between August 1992 and January 1993, 26 police vehicles were similarly converted.

A second refuelling station opened in March 1993. In an effort to further encourage and develop the use of alternative-fuel vehicles, a second State of Florida grant for USD 250,000 was awarded in August 1993. Again with matching city funds, 35 natural gas vehicles were added to the city's fleet, along with two time-fill stations, which allow refuelling during off-hours. The city continued to convert cars to run on CNG, and expanded its efforts to other vehicle types including five 22-passenger buses.

In 1994, the U.S. Postal Service selected Sunrise as one of the first towns to receive natural gas-powered postal vehicles. Twenty- eight of these vehicles were put into service in September. Also in 1994, a third state grant was warded for USD 200,640. These funds enabled the city to purchase additional natural-gas-powered vehicles, including a school bus, and to build a mobile refuelling facility.

Currently, about 130 alternative-fuel vehicles are in operation in Sunrise as a result of the programme; 94 of these belong to city fleets.

Energy Data

Programme officials estimate that more than 2.8 million liters (750,000 gallons) of gasoline will be conserved over the next decade due to the use of alternative-fuel vehicles.

Environmental Data

Harmful emissions have been lowered as a result of operating the alternative-fuel vehicles. In one emissions comparison, a factory-dedicated natural gas vehicle reduced hydrocarbon emissions by nearly 350%, carbon monoxide by about 20%, and nitrogen oxides by 150% compared to a conventional gasoline-operated vehicle.

Economic Data

Since the programme began, the city has saved an estimated USD 50,000 in fuel costs, based on costs of USD 0.11 per liter of CNG (USD 0.43 per gallon equivalent) and USD 0.21 per liter of gasoline (USD 0.80 per gallon). There are other economic benefits as well. The programme resulted in the creation of several jobs (totalling about 2000 labor-hours each year) to convert the vehicles and operate the refuelling stations.

KEYWORDS :CNG, grants, funds, encouragement, emissions

Project Details

```
Project Number          : US-95-554
Project Type            : Result
Start date              : January 01, 91
End date                : December 01, 94
Country                 : United States of America
CADDET Brochure         :
Primary Sector          : 4X     TRANSPORT: General
Primary Technology      : C01    Fossil Fuels
Secondary Sectors       :

Secondary Technologies :
```

Organisation(s) and Contact(s)

```
Organisation: City of Sunrise Gas Department
Abbreviation:
Role:          Host Organisation
Address      : 4747 Nob Hill Road, Suite 5
               Sunrise, Florida
               33351
               US
Tel          :
Fax          :


Contact      : Zehender, H.
Title        : Mr.
Department   :
Tel          : 01-305-572-2294
Fax          :
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```
Organisation: State of Florida, Department of Community Affairs
Abbreviation:
Role:          Subsidising Organisation
Address      : 2740 Centerview Drive
               Tallahasee, Florida
               32399-2100
               US
Tel          :
Fax          :


Contact      : Fleming, S.
Title        : Ms.
Department   : Florida Energy Office
Tel          : 01-904-488-8466
Fax          :
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```
Organisation: CADDET US National Team
Abbreviation:
Role:          Information Organisation
Address      : Oak Ridge National Laboratory, Energy Division
               Oak Ridge,TN
               37831-6070
               US
Tel          : +1-423-576-8152
Fax          : +1-423-576-7572


Contact      : Shaver, Julia A.
Title        : Ms
Department   :
Tel          :
```

Energy Efficiency Project

Compressed natural gas system for transit buses

Location : Hamilton, Ontario; Canada

Project Description
- General Description
- Technical data
- Performance data
- Energy data
- Environmental data
- Economic data
- Keywords
- Project Details

Related data
- Organisations
- Documents

Project Description

General Description

Hamilton Street Railway (HSR) Company of Hamilton, Ontario (Canada) has used compressed natural gas (CNG) as a fuel for transit buses. Late in 1985, a typical diesel bus engine was selected as the prototype and retrofitted with suitable parts for natural gas operation. Following a test period, an additional five buses were converted to CNG: three in 1986 and two in 1987. A CNG refuelling facility was also installed to supply all buses. The six buses, operating in daily service, use a spark-ignited 4-stroke Iveco engine converted to use natural gas fuel.

Technical Data

The CNG engine was based on the conversion of a 4-stroke, 6 cylinder, 9.6 litres diesel engine. A CNG compatible spark ignition system was installed with an interfacing of the gas let-down and mixing system (the gas "carburation system"). The conversion to CNG buses also involved replacing the diesel fuel tank with fibre-wound aluminum tanks. A total of 215 cubic metres storage capacity, separated in seven cylinders, was installed to give the equivalent of 200 litres of diesel (approximately 300 km of range).

The drivers were enthusiastic about the performance of the CNG buses, and no adverse comments were received from the public.

Energy Data

CNG consumption: 74.3 cubic metres/100 km.

Economic Data

Natural gas was chosen because of the large supplies available in Canada. This choice was also based on the anticipation that the price of Canadian gas would not increase at the same rate as that of diesel. The decision to use CNG was in addition due in part to the substancial financial incentives available from the federal and Ontario governments. There was no federal or sales tax on CNG, but such taxes were levied on diesel. For the period covering from November 1989 to March 1990, the equivalent diesel bus in HSR service cost CAD 0.22 per kilometer for fuel at CAD 0.38 per litre. The CNG fleet cost CAD 0.09 per kilometer at an average gas price of CAD 0.125 per cubic meter (CNG consumption: 74.3 cubic meters/100km). More recently, fuel costs continue to favour natural gas;
for instance, in 1991 diesel fuel cost CAD 0.25 per km compared to CAD 0.11 for the natural gas (including compression electricity costs).

Environmental Data

The interior noise level, and the particulate emissions, odour level and carbon monoxide from the exhaust, were all lower than from current technology diesel buses.

KEYWORDS :HSR CNG

Project Details

```
Project Number          : CA-92-009
Project Type            : Result
Start date              : November 01, 89
End date                : December 01, 91
Country                 : Canada
CADDET Brochure         :
Primary Sector          : 4X     TRANSPORT: General
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Agreement No. 96-053

AGREEMENT

This Agreement is made and entered into this ____ day of _____, 1996, by and between the SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, a unified air pollution control district formed pursuant to California Health and Safety Code section 40150 et seq. (District), and the CITY OF LODI (Contractor).

WITNESSETH:

WHEREAS, the California Clean Air Act (CCAA) requires local air pollution control districts to reduce emissions from motor vehicles;

WHEREAS, AB 2766, codified in California Health and Safety Code section 44223, authorizes districts to impose a fee of up to Four Dollars ($4) upon certain registered motor vehicles within the district, and the governing board of the District has imposed said fee;

WHEREAS, said legislation requires District to use said funds for activities related to reduce air pollution from motor vehicles and for related planning, monitoring, enforcement, and technical studies necessary for the implementation of the California Clean Air Act of 1988; and

WHEREAS, District appointed a motor vehicle evaluation committee for vehicle emissions reduction projects to review proposals for eligible projects for the purpose of making funding recommendations to the Governing Board of the District; and

WHEREAS, on September 18, 1996, after holding public hearing and considering the recommendations of the evaluation committee, District approved for funding those projects deemed to be most suitable for vehicle license fee funding and best meeting the goals of Health and Safety Code sections 44220 through 44247;

WHEREAS, Contractor has proposed a project that meets the eligibility criteria of District that has been approved by District for funding; and

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WHEREAS, Contractor represents that it is willing and able to perform the activities set forth herein.

NOW, THEREFORE, based on their mutual promises, covenants, and conditions, the parties hereby agree as follows:

1. PROJECT

Contractor shall perform all activities and work necessary to install a CNG fueling station, as set forth in the proposal which is attached hereto and incorporated herein as Exhibit A. Contractor agrees to furnish all labor, materials, equipment, licenses, permits, fees, and other incidentals necessary to perform and complete, per schedule, in a professional manner, the services described herein. Contractor represents that Contractor has the expertise necessary to adequately perform the project specified in Exhibit A.

In the event of any conflict between or among the terms and conditions of this Agreement, the exhibits incorporated herein, and the documents referred to and incorporated herein, such conflict shall be resolved by giving precedence in the following order of priority:

1. To the text of this Agreement
2. Exhibit A to this Agreement
3. To the Motor Vehicle Emissions Reduction Projects Request for Proposals (RFP) prepared by District and dated February 5, 1996.

2. PERIOD OF PERFORMANCE/TIMETABLE

Contractor shall commence performance of work and produce all work product in accordance with the work schedule and deadlines for performance identified in Exhibit A, pages 7 and 8, of this Agreement, which is attached hereto and incorporated herein, unless this Agreement is terminated sooner as provided for elsewhere in this Agreement.

If requested by District, Contractor shall submit regular progress reports, at intervals determined by District, detailing the work performed during the current

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reporting period; work planned for the next reporting period; problems identified, solved, and/or unresolved; and the percentage of each task completed. Contractor shall provide District with a comprehensive final written report prior to the end of the contract term. Said final report shall document the work performed under this Agreement.

3. COMPENSATION

The total obligation of District under this Agreement shall not exceed Ninety Six Thousand Eight Hundred Dollars ($96,800).

Contractor shall obtain through other sources sufficient additional monies to fund the total cost of the project as outlined in Exhibit A, pages 1, 8 and 9. Satisfactory written evidence of such funding commitments shall be provided to District prior to the release by District of any funds under this Agreement. In the event funding from other sources for the total cost of the project as outlined in Exhibit A, pages 1, 8 and 9, is not received by Contractor, District reserves the right to terminate or re-negotiate this Agreement. In that event, if requested by District, Contractor shall return any District funds advanced.

A. Payments: Advance payments shall not be permitted. Payments will be permitted only at which time equivalent services have been satisfactorily rendered. District shall reimburse Contractor quarterly, in arrears, after receipt and verification of a properly support financial claim. Claims and all supporting documentation shall be submitted to San Joaquin Valley Unified Air Pollution Control District, Planning Department, Attention: John Villeneuve or Jeff Findley.

Payment shall be made to Contractor by District upon submission and evaluation of Contractor's invoice or claim that shall set forth the work completed pursuant to this Agreement.

District will issue payment to Contractor within thirty (30) calendar days of receipt of proper documentation and verification that Contractor has

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satisfactorily completed the work for which compensation is sought.

The amount to be paid to Contractor under this Agreement includes all sales and use taxes incurred pursuant to this Agreement, if any, including any such taxes due on equipment purchased by Contractor. Contractor shall not receive additional compensation for reimbursement of such taxes and shall not decrease work to compensate therefore.

Concurrently with the submission of any claim for payment, Contractor shall certify (through copies of invoices issued, checks, receipts, and the like) that complete payment has been made to any and all subcontractors as provided.

B. Surplus Funds: Any compensation which is not expended by Contractor pursuant to the terms and conditions of this Agreement by the project completion date shall automatically revert to District. Only expenditures incurred by Contractor in the direct performance of this Agreement will be reimbursed by District. Allowable expenditures under this Agreement are specifically established and included in Exhibit A, pages 8 and 9, attached hereto and incorporated herein.

C. Close-out Period: All final claims shall be submitted by Contractor within sixty (60) days following the final month of activities for which payment is claimed. No action will be taken by District on claims submitted beyond the 60-day close-out period.

4. NON-ALLOCATION OF FUNDS

The terms of this Agreement and the services to be provided thereunder are contingent on the approval of funds by the appropriating government agency. Should sufficient funds not be allocated, the services provided may be modified or this Agreement terminated at any time by giving Contractor thirty (30) days' prior written notice.

5. INDEPENDENT CONTRACTOR

In performance of the work, duties, and obligations assumed by

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Contractor under this Agreement, it is mutually understood and agreed that Contractor, including any and all of Contractor's officers, agents, and employees, will at all times be acting and performing as an independent contractor and shall act in an independent capacity and not as an officer, agent, servant, employee, joint venturer, partner, or associate of District. Furthermore, District shall have no right to control or supervise or direct the manner or method by which Contractor shall perform its work and function. However, District shall retain the right to administer this Agreement so as to verify that Contractor is performing its obligations in accordance with the terms and conditions thereof. Contractor and District shall comply with all applicable provisions of law and the rules and regulations, if any, of governmental authorities having jurisdiction over matters the subject thereof.

Because of its status as an independent contractor, Contractor shall have absolutely no right to employment rights and benefits available to District employees. Contractor shall be solely liable and responsible for providing to, or on behalf of, itself all legally required employee benefits. In addition, Contractor shall be solely responsible and save District harmless from all matters relating to payment of Contractor's employees, including compliance with social security, withholding, and all other regulations governing such matters. It is acknowledged that during the term of this Agreement, Contractor may be providing services to others unrelated to District or to this Agreement.

6. TERMINATION

A. Breach of Agreement: District may immediately suspend or terminate this Agreement, in whole or in part, where in the determination of District there is:

1. An illegal or improper use of funds;
2. A failure to comply with any term of this Agreement;
3. A substantially incorrect or incomplete report submitted to District; or
4. Improperly performed services.

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In no event shall any payment by District constitute a waiver by District of any breach of this Agreement or any default which may then exist on the part of Contractor. Neither shall such payment impair or prejudice any remedy available to District with respect to the breach or default. District shall have the right to demand of Contractor the repayment to District of any funds disbursed to Contractor under this Agreement which in the judgment of District were not expended in accordance with the terms of this Agreement. Contractor shall promptly refund any such funds upon demand.

In addition to immediate suspension or termination, District may impose any other remedies available at law, in equity, or otherwise specified in this Agreement.

B. Without Cause: Either party may terminate this Agreement at any time upon giving the other party at least thirty (30) days' advance written notice of intention to terminate. In such case, Contractor shall, subject to paragraph 3, be paid the reasonable value of all services satisfactorily rendered and actual, reasonable costs incurred up to the time of the termination. Upon such termination, all the work produced by Contractor shall be promptly delivered to District.

7. MODIFICATION

Any matters of this Agreement may be modified from time to time by the written consent of all the parties without in any way affecting the remainder.

8. NON-ASSIGNMENT

Neither party shall assign, transfer, or subcontract this Agreement, nor their rights or duties under this Agreement, without the prior express, written consent of the other party.

9. INDEMNIFICATION

Contractor agrees to indemnify, save, hold harmless, and at District's request, defend District, its boards, committees, representatives, officers, agents, and employees from and against any and all costs and expenses (including reasonable

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attorneys' fees and litigation costs), damages, liabilities, claims, and losses (whether in contract, tort, or strict liability, including, but not limited to, personal injury, death, and property damage) occurring or resulting to District which arises from any negligent or wrongful acts or omissions of Contractor, its officers, agents, subcontractors, or employees in their performance of this Agreement.

10. INSURANCE

A. Without limiting District's right to obtain indemnification from Contractor or any third parties, Contractor, at its sole expense, shall maintain in full force and effect the following insurance policies throughout the term of this Agreement:

1) Commercial general liability insurance with minimum limits of coverage in the amount of One Million Dollars ($1,000,000) per occurrence;

2) Commercial automobile liability insurance which covers bodily injury and property damage with a combined single limit with minimum limits of coverage in the amount of One Million Dollars ($1,000,000) per occurrence;

3) Workers' compensation insurance in accordance with California law.

B. Such insurance policies shall name District, its officers, agents, employees, individually and collectively, as additional insured (except workers' compensation insurance), but only insofar as the operations under this Agreement are concerned. Such coverage for additional insured shall apply as primary insurance, and any other insurance maintained by District, its officers, agents, and employees, shall be excess only and not contributing with insurance provided under Contractor's policies herein. This insurance shall not be canceled or changed without a minimum of thirty (30) days' advance, written notice given to District.

C. Prior to the commencement of performing its obligations under this Agreement, Contractor shall provide certifications of insurance on the foregoing

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policies, as required herein, to District, stating that such insurance coverages have been obtained and are in full force; that District, its officers, agents, and employees will not be responsible for any premiums on the policies; that such insurance names District, its officers, agents, and employees, individually and collectively, as additional insured (except workers' compensation insurance), but only insofar as the operations under this Agreement are concerned; that such coverage for additional insured shall apply as primary insurance and any other insurance maintained by District, its officers, agents, and employees, shall be excess only and not contributing with insurance provided under Contractor's policies herein. This insurance shall not be canceled or changed without a minimum of thirty (30) days' advance, written notice given to District.

D. In the event Contractor fails to keep in effect at all times insurance coverage as herein provide, District may, in addition to other remedies it may have, suspend or terminate this Agreement upon the occurrence of such event.

E. If Contractor is a government entity, then it may self-insure such of those risks identified in paragraphs 10.A.1-10.A.3 of this Agreement, provided, however, that:

1) District, its officers, agents, and employees, individually and collectively, shall be named as additional insured (except for workers' compensation insurance) on Contractor's self-insurance plans, but only insofar as the operations under this Agreement are concerned;

2) Such self-insurance plans shall be reasonably satisfactory to District; and

3) All those provisions identified in subparagraph 10.C of this Agreement concerning the relationship of Contractor's primary and District's excess insurance to each other, the requirement of Contractor delivering a certificate of insurance or other suitable evidence to District, and the cancellation/change of insurance requirements shall apply to such self-insurance plans.

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11. AUDITS AND INSPECTIONS

Contractor shall at any time during regular business hours, and as often as District may deem necessary, make available to District for examination all of its records and data with respect to the matters covered in this Agreement. Contractor shall, and upon request by District, permit District to audit and inspect all of such records and data necessary to ensure Contractor's compliance with the terms of this Agreement.

Contractor shall be subject to an audit by District or its authorized representative to determine if the revenues received by Contractor were spent for the reduction of pollution as provided in AB 2766 and to determine whether said funds were utilized as provided by law and this Agreement. If, after audit District makes a determination that funds provided Contractor pursuant to this Agreement were not spent in conformance with this Agreement or AB 2766 or any other applicable provisions of law, Contractor agrees to immediately reimburse District all funds determined to have been expended not in conformance with said provisions.

Contractor shall retain all records and data for activities performed under this Agreement for at least three (3) years from the date of final payment under this Agreement or until all state and federal audits are completed for that fiscal year, whichever is later.

Because this Agreement exceeds Ten Thousand Dollars ($10,000), Contractor shall be subject to the examination and audit of the auditor general for a period of three (3) years after final payment under contract (Government Code § 10532).

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12. NOTICES

The persons and their addresses having authority to give and receive notices under this Agreement are as follows:

CONTRACTOR	DISTRICT
Jerry Glenn, Assistant City Manager 221 West Pine Street Lodi, CA 95240	David L. Crow, Executive Director/APCO 1999 Tuolumne, Ste. 200 Fresno, CA 93721

Any and all notices between District and Contractor provided for or permitted under this Agreement or by law shall be in writing and shall be deemed duly served when personally delivered to one of the parties, or in lieu of such personal service, when deposited in the United States mail, postage prepared, addressed to such party.

13. POLITICAL ACTIVITY PROHIBITED

None of the funds, materials, property, or services provided under this Agreement shall be used for any political activity, or to further the election or defeat of any candidate for public office contrary to federal or state laws, statutes, regulations, rules, or guidelines.

14. LOBBYING PROHIBITED

None of the funds provided under this Agreement shall be used for publicity, lobbying, or propaganda purposes designed to support or defeat legislation before the Congress of the United States of America or the Legislature of the State of California.

15. CONFLICT OF INTEREST

No officer, employee, or agent of District who exercises any function or responsibility for planning and carrying out the services provided under this Agreement shall have any direct or indirect personal financial interest in this Agreement. Contractor shall comply with all federal and state conflict of interest laws, statutes, and regulations, which shall be applicable to all parties and beneficiaries

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under this Agreement and any officer, agent, or employee of District.

16. GOVERNING LAW

This Agreement shall be governed in all respects by the laws of the State of California. Venue for any action arising out of this Agreement shall only be in Fresno County, California.

17. BINDING ON SUCCESSORS

This Agreement, including all covenants and conditions contained herein, shall be binding upon and inure to the benefit of the parties, including their respective successors-in-interest, assigns, and legal representatives.

18. TIME IS OF THE ESSENCE

It is understood that for Contractor's performance under this Agreement, time is of the essence. The parties reasonably anticipate that Contractor will, to the reasonable satisfaction of District, complete all activities provided herein within the time schedule outlined in the attachments to this Agreement, provided that Contractor is not caused unreasonable delay in such performance.

19. DATA OWNERSHIP

Upon termination or expiration of this Agreement, all data which is received, collected, produced, or developed by Contractor under this Agreement shall become the exclusive property of District, provided, however, Contractor shall be allowed to retain a copy of any non-confidential data received, collected, produced, or developed by Contractor under this Agreement subject to District's exclusive ownership rights stated herein. Accordingly, Contractor shall, if requested, surrender to District all such data which is in its possession (including its subcontractors or agents), without any reservation of right or title, not otherwise enumerated herein.

District shall have the right at reasonable times during the term of this Agreement to inspect and reproduce any data received, collected, produced, or developed by Contractor under this Agreement. No reports, professional papers, information, inventions, improvements, discoveries, or data obtained, prepared,

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assembled, or developed by Contractor, pursuant to this Agreement, shall be released or made available (except to District) without prior, express written approval of District while this Agreement is in force.

20. NO THIRD-PARTY BENEFICIARIES

Notwithstanding anything else stated to the contrary herein, it is understood that Contractor's services and activities under this Agreement are being rendered only for the benefit of District, and no other person, firm, corporation, or entity shall be deemed an intended third-party beneficiary of this Agreement.

21. SEVERABILITY

In the event that any one or more of the provisions contained in this Agreement shall for any reason be held to be unenforceable in any respect by a court of competent jurisdiction, such holding shall not affect any other provisions of this Agreement, and the Agreement shall then be construed as if such unenforceable provisions are not a part hereof.

22. SPECIAL CONDITIONS

The entire proposed project must be completed within one (1) year of contract execution.

23. ENTIRE AGREEMENT

This Agreement constitutes the entire agreement between Contractor and District with respect to the subject matter hereof and supersedes all previous negotiations, proposals, commitments, writings, advertisements, publications, and understandings of any nature whatsoever unless expressly included in this Agreement.

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IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and year first hereinabove written.

CONTRACTOR	**DISTRICT**
City of Lodi	San Joaquin Valley Unified Air Pollution Control District
By _____ Jerry Glenn, Assistant City Manager	By _____ Charles Harness, Chair Governing Board
_____ Tax I.D. No.	
Recommended for approval: San Joaquin Valley Unified Air Pollution Control District	***Approved as to legal form:*** San Joaquin Valley Unified Air Pollution Control District
_____ David L. Crow Executive Director/APCO	_____ Philip M. Jay District Counsel
Approved as to accounting form: San Joaquin Valley Unified Air Pollution Control District	***For accounting use only:*** Program: _____ Accounting No.: _____
_____ Roger W. McCoy Director of Administrative Services	

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OMPRESSED NATURAL GAS COM ESSOR STATION

96-053

EXHIBIT SUMMARY SHEET (Cover)

(This is a summary only. You must also supply the detailed information as requested in the RFP.)

Applicant (include other participating entities): City Of Lodi, California

Contact Person: Jerry Glenn, Assistant City Manager

Address: 221 West Pine Street, Lodi, CA 95240

APR 19 1996

Phone #: 209/333-6800 x607 **FAX # (optional):** 209/333-6807

Total Project Budget:	**REMOVE Funds**	**Matching Funds**	**Total Project Costs**
Materials	$ 88,000	$ 0	$ 88,000
Personnel	$ 0	$ 9,350	$ 9,350
Other	$ 8,800	$ 169,500	$ 178,300
TOTAL	$ 96,800	$ 178,850	$ 275,650

Type of Project: (check one)

___	Technology Based	___	Public Education
___	Trip Reduction	___	Research
___	Plan Development	X	Transportation Control Measure (TCM)

Identify TCM (see Attachment 5): Fleet Low Emission Vehicle Program

Implementation Area for Project: City of Lodi, CA

Cost Effectiveness:	**As Proposed**	**Alternate Funding Level**
A. Useful Life of Project (years)	11-15	16-20
B. Total Emissions Reduced (tons of NOx, ROG, CO, PM-10)	72	55
C. Cost Effectiveness (Cost divided by item B)	3,828.47	5,011.81

Other Performance Measures:

A. Audience Reached: Residents of and visitors to the City of Lodi, CA

B. Other:

Brief Project Description:

This project will provide a Compressed Natural Gas (CNG) Compressor Station for the City of Lodi to provide fuel for seven CNG-powered transit buses that will be purchased using PVEA funds.

EXHIBIT A

REQUEST FOR PROPOSAL CONTENTS CHECKLIST

Applicant: City of Lodi, California - Compressed Natural Gas Compressor Station

Please complete and attach this checklist with your application.

[X]	Exhibit Summary Sheet (Cover) - page 1
[X]	Request for Proposal Contents Checklist (Second Page) - page 2
[X]	Authorization Letter/Resolution (Third Page) - page 3
[X]	Project Description - page 4
[X]	Project Organization/Background - page 5
[X]	Emission Benefits/Cost Effectiveness - page 5
[X]	Work Statement - page 7
[X]	Funding Request/Cost Breakdown - page 8
[X]	Schedule of Deliverables/Self-Monitoring Program - page 9
[X]	Local TPA Review (when applicable) - page N/A
[X]	All Pages Numbered
[X]	20 Copies of Proposal

CITY OF LODI

CITY HALL, 221 WEST PINE STREET
P.O. BOX 3006
LODI, CALIFORNIA 95241-1910
(209) 333-6700
FAX (209) 333-6807

April 11, 1996

San Joaquin Valley Unified Air Pollution Control District
1999 Tuolumne Street, Suite 200
Fresno , CA 93721
ATTN: John Villeneuve or Jeff Findley

RE: REMOVE Application

Dear Sirs:

Please find attached the City of Lodi's response to the 1995-96 REMOVE Program Request for Proposals. This program is essentially comprised of the purchase and installation of two distinct pieces of equipment - a CNG compressor station and an electric bus. As this response will demonstrate, we have researched this program and feel supplying City transit vehicles with CNG and operating an electric bus will produce many benefits for this community. We are eager to implement this proposal and look forward to developing a model program for our City.

On Wednesday April 10, 1996, the Lodi City Council was informed of the availability of REMOVE Program funding, the potential to use REMOVE to obtain a CNG compressor station and electric bus, and costs associated with these purchases. City Council unanimously approved preparation and submission of this application. Staff time contributed by the City for coordinating the purchase and installation of this equipment is valued at close to $19,000. The City will be responsible for obtaining physical space to locate this equipment which also represents a contribution on our part.

We expect this narrative will satisfy all requirements your office may have for this particular grant. If you have further questions, the contact person for this project is: **Mr. Jerry Glenn, Assistant City Manager, 221 West Pine Street, Lodi, CA 95240. (209) 333-6800 ext. 607.** Thank you.

Signed ,

H. Dixon Flynn
City Manager
City of Lodi

Jerry Glenn, Assistant City Manger
Public Works - Transit Division
City of Lodi

04/11/96 C:\KJE\WORK\TRANSIT\REMOVE1.DOC

CITY OF LODI
COMPRESSED NATURAL GAS
COMPRESSOR STATION PROPOSAL

PROJECT DESCRIPTION

The City of Lodi has two intra-city transit services: one is the GrapeLine, the other is a Dial-A-Ride service. These two services are the main sources of public transportation to the residents of Lodi, population 55,000. The GrapeLine System, which has been in existence since November 1994, has four buses, plus one spare, used for four routes in the City of Lodi. The current buses carry up to eleven passengers, including two wheelchair occupants. The GrapeLine provides transportation to residents and visitors throughout the city, and also drops commuters off at Park and Ride commuter locations, and at San Joaquin County interjurisdictional stations. The Dial-A-Ride service, in existence since 1978, has a fleet of 10 vehicles: four station wagons, two sedans, and four eleven-passenger buses (the same as the GrapeLine buses).

Due to the constant use of the buses, they often need service, and for the GrapeLine the substitute bus is used as much as the regular buses. Also, because they are powered by gasoline, they emit air pollutants into the City of Lodi's atmosphere. As a result, the City of Lodi's Public Works Department, with the use of Petroleum Violation Escrow Account (PVEA) funds, intends to purchase three Compressed Natural Gas (CNG)-powered buses in 1996 and four in 1997; four of these buses will be used for the GrapeLine, and three will be used for the Dial-A-Ride service. The CNG buses will help the City of Lodi to reach its goal of reducing air pollution in the city. However, currently there is no CNG compressor station located in Lodi, and in order to use the CNG-powered buses, the City of Lodi is requesting funds from the REMOVE program to purchase a CNG Compressor Station.

By providing CNG-powered buses to the community, Lodi will play a leadership role in the promotion of air pollution reduction, serving as an example to the community. The use of these buses will displace gasoline energy consumption equivalent to 4.33 billion BTU's per year. Another advantage is that a high-profile bus fleet operating on an alternative fuel source sets a great example for other agencies, businesses and residents in this community, who may be interested in using alternative fuel in their vehicles. City staff are often contacted for information on a wide range of subjects; through the process of purchasing the CNG vehicles and the CNG Compressor Station, and putting them to use, City staff will become well educated on the subject and will be able to convey the benefits of alternative fuel use to the community. Lessons will be learned regarding the most efficient ways to develop and implement such a project; City staff will then also be able to provide direction on pitfalls to avoid, thus making the process easier for other entities to follow.

The CNG Compressor Station will have two fill posts consisting of four hoses each, for a total of 8 fill stations. It is a slow fill process, taking 10 hours to fill each bus. Please see the **Appendix I** for design examples of the Compressor Station and fill posts.

The goal of this project proposed here is to build a CNG slow-fill fuel station that will provide CNG fuel to seven CNG-powered buses. This goal will allow the City of Lodi to accomplish the following objectives:

- Cost Efficiency: The cost of gasoline is $1.35 per gallon; the cost of CNG is $ .32 per gallon, representing an enormous cost savings for the operation of the bus fleet
- Reduction of Air Pollution Emissions from motor vehicles by replacing gasoline-powered buses with CNG-powered buses for the City of Lodi's GrapeLine and Dial-A-Ride Transit Systems.

PROJECT ORGANIZATION/BACKGROUND

The City of Lodi Transit Division as part of the City of Lodi's Public Works Department will be the lead agency on this project. Public Works is the department primarily responsible for purchase and implementation of all equipment obtained with requested grant funds. Public Works, while not having direct prior experience with CNG buses, does have a shop facility comprised of six bays that has provided ongoing maintenance for a variety of compressors in Lodi. Organization charts of the Public Works, Street, and Building & Maintenance divisions are located in the **Appendix II.** Public Works is committed to fulfilling SJVUAPCD and Evaluation Committee goals through the construction of a CNG Compressor Station for CNG-powered buses.

Sub-contractors will be identified through a bidding process. Sub-contractors are expected to have experience with designing and building CNG Compressor Stations that can fuel at least seven vehicles at a time.

EMISSION BENEFITS/COST EFFECTIVENESS

GrapeLine Calculations: Based on operation of four buses, six days per week (312 days per year), making 61 trips per day each for a fleet total of 244 trips per day.
Dial-A-Ride Calculations: Based on operation of three buses, seven days per week (365 days per year), making 30 trips per day each for a fleet total of 90 trips per day. Please see **Appendix III** for the calculations and assumptions necessary to derive and support these estimates.
Estimated Emission Reductions
GrapeLine:

- HC and CO remain stable between diesel and alternate fuel.
- NOx:
  - ⇒ **a reduction of 5,888 grams of NOx per day.**
  - ⇒ **a reduction of 1,837,056 grams of NOx per year.**
- PM-10:
  - ⇒ **a reduction of 25.6 grams of PM-10 per day.**
  - ⇒ **a reduction of 7,987 grams of PM-10 per year.**

Dial-A-Ride:

- HC and CO remain stable between diesel and alternate fuel.
- NOx:
  - ⇒ **a reduction of 2,208 grams of NOx per day.**
  - ⇒ **a reduction of 805,920 grams of NOx per year.**
- PM-10:

⇒ **a reduction of 9.6 grams of PM-10 per day.**
⇒ **a reduction of 3,504 grams of PM-10 per year.**

Vehicle Miles Traveled (VMT) Reductions
GrapeLine (four buses):
- 40 VMT reductions per bus trip
- 2,440 VMT reductions per bus per day
- 9,760 VMT reductions per day for GrapeLine fleet
- 3,045,120 VMT reductions per year for GrapeLine fleet

Each GrapeLine bus travels approximately 160 miles per day:
- 640 miles per day traveled by four GrapeLine buses
- 199,680 miles traveled per year by four GrapeLine buses

Dial-A-Ride (three buses):
- 40 VMT reductions per bus trip
- 1,200 VMT reductions per bus per day
- 3,600 VMT reductions per day for Dial-A-Ride buses
- 1,314,000 VMT reductions per year for Dial-A-Ride buses

Each Dial-A-Ride bus travels approximately 80 miles per day:
- 240 miles per day traveled by three Dial-A-Ride buses;
- 87,600 miles traveled per year by three Dial-A-Ride buses

Vehicle Trip Reductions
GrapeLine (four buses):
- 610 trips per day eliminated per bus
- 2,440 trips eliminated per day by the GrapeLine fleet
- 761,280 trips eliminated per year by the GrapeLine fleet

Dial-A-Ride (three buses):
- 300 trips per day eliminated per bus
- 900 trips eliminated per day by the Dial-A-Ride fleet
- 328,500 trips eliminated per year by the Dial-A-Ride fleet

Persons Served
GrapeLine:
- 4,880 persons potentially will be served daily by the GrapeLine
- 1,522,560 persons potentially will be served by the GrapeLine per year

Dial-A-Ride:
- 1,800 persons potentially served daily by Dial-A-Ride
- 657,000 persons potentially will be served by Dial-A-Ride per year

Cost Effectiveness
The cost for gasoline is $1.35 per gallon; the cost for CNG is $ .32 per gallon, which is a cost savings of $1.03 per gallon.

GrapeLine:

- cost savings of $120 per day for the GrapeLine fleet
- annual cost savings of **$37,440** for GrapeLine

Dial-A-Ride:

- cost savings of $90 per day for the Dial-A-Ride buses
- annual cost savings of **$32,850** for Dial-A-Ride

Total yearly cost savings for both will be **$70,290**.

Air Quality Benefits
GrapeLine:

- **12,712.4 grams reduction of ROG auto emissions per day; 3,966,268.8 per year**
- **9,564.8 grams reduction of NOx auto emissions per day; 2,984,217.6 per year**
- **PM-10:** Auto trip end emission factor is not available for PM-10, therefore calculations cannot be made.
- **124,976.8 grams reduction of CO auto emissions per day; 38,992,761.6 per year**

Dial-A-Ride:

- **4,689 grams reduction of ROG auto emissions per day; 1,711,485 per year**
- **3,528 grams reduction of NOx auto emissions per day; 1,189,170 per year**
- **PM-10:** Auto trip end emission factor is not available for PM-10, therefore calculations cannot be made.
- **46,098 grams reduction of CO auto emissions per day; 16,825,770 per year**

WORK STATEMENT

Timeline

November 15, 1996	Transportation Coordinator begins preliminary research on CNG manufacturers
December 1	Transportation Coordinator begins preparation of documents: ■ Request for Information (RFI) ■ Request for Qualifications (RFQ) ■ Request for Proposals (RFP)
January 3, 1997	Transportation Coordinator sends out RFI
February 14	RFI due
Feb. 14 -March 14	Transportation Coordinator reviews RFI's received, prepares the RFQ/RFP

March 14	Release RFQ/RFP, to be due mid-April
March 17 - 31	Selection & Review Committee members are chosen by the City Manager and Public Works Director
April 1	Selection & Review Committee is convened
April 16	RFQ/RFP's due
April 16 - May 2	Selection & Review Committee reviews RFP's
May 3	Sub-contractor is chosen
May 31	Contracts executed between sub-contractors and City; to be approved by City Council, executed by City Attorney, Public Works Director
July 31	Delivery of CNG Compressor Station equipment. Construction of concrete pad for Compressor and islands for fill posts will begin.
September 1	Training of City personnel by sub-contractor regarding use of system
September 4, 1997	CNG Compressor Station in place and ready for use

FUNDING REQUEST/COST BREAKDOWN

The City of Lodi's Public Works Department, Transit Division, proposes to purchase a CNG Compressor Station to provide slow-fill fueling for seven CNG-powered buses for the intra-city GrapeLine Transit System and Dial-A-Ride Service.

REMOVE Funds. The City of Lodi request **$96,800** from the REMOVE Program for the cost of the CNG Fuel Station. This amount includes the following:

- $58,000 for purchase of one CNG Compressor Station that will include two compressor engines (one will be for back up use only) and fill posts. Please see **Appendix IV** for an itemized list of equipment that make up a typical Station.
- $20,000 for the installation of the CNG Compressor Station and fill posts
- $10,000 for an underground gas line and fuel hose installation
- $ 8,800 for administrative costs.

Matching Funds. There are **$94,500** in matching monetary funds available to Public Works from the Petroleum Violation Escrow Account (PVEA). Please see **Appendix V** for the PVEA award letter as proof of availability. These funds will be used to pay for the differential cost between gasoline- and CNG-powered buses.

Lodi's Public Works Department and other city departments will also provide staff time as an in-kind contribution to this project. Following is a breakdown of this contribution:

Public Works	**Hours Devoted to CNG Station**	**Cost Participation**
Tasks for these positions will include development of documents (RFI, RFQ, RFP); creation and convening of Selection and Review Committee, administrative duties pertaining to this project, and oversight of Fuel Station construction.		
Transportation Coordinator	80	$1,540
Public Works Director	20	$ 790
Administrative Assistant	20	$ 430
Building & Equipment Maintenance Supervisor	80	$2,300
Transit Field Supervisor	20	$ 200
		$5,260

Other Departments	**Hours Devoted to CNG Station**	**Cost Participation**
Tasks for these positions include executing contracts, purchasing equipment for the Fuel Station, administrative duties pertaining to this project, and oversight of contracts.		
Finance - Purchasing Division	80	$1,250
Assistant to the City Manager	40	$1,000
City Attorney	40	$1,540
City Council	5	$ 250
City Clerk	2	$ 50
		$4,090

Estimated Cost Participation of Land used for the CNG Compressor Station: Based on an estimate of $15 per square foot, and an estimated 15,000 square feet to be used for the Station, the estimated amount is **$75,000.**

Total Matching Funds: $178,850

SCHEDULE OF DELIVERABLES/ SELF-MONITORING PROGRAM

The schedule of deliverables and work products and their anticipated dates of delivery are listed above in the **Work Statement Timeline**. Accomplishment of these deliverables will be measured based on whether the task deadlines set in the timeline are met. The following project objectives will be measured: 1) Cost Efficiency will be measured based on cost savings of gasoline vs. CNG-powered buses; and 2) Reduction of air pollution emissions will be measured based on comparing pre-CNG (all buses powered by gasoline) emissions readings to post-CNG readings (seven buses powered by CNG). All results will be reported to the SJVUAPCD on a quarterly basis.

Compressed Natural Gas
Compressor Station
Appendices

Appendix I:
Compressor Station Design.....I-1
Fill Post Design.....I-2

Appendix II:
Public Works Administration Organization Chart.....II-1
Street Division Organization Chart.....II-2
Building & Equipment Maintenance Division Organization Chart.....II-3

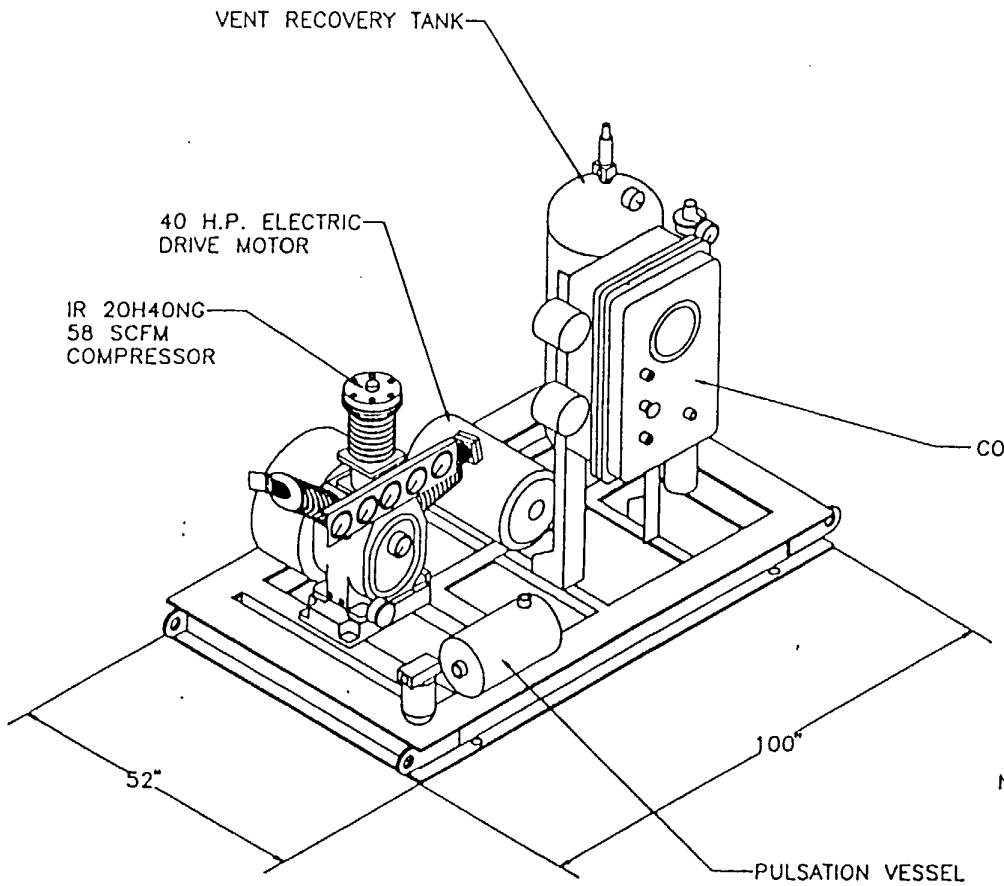
Appendix III:
Emission Benefits/Cost Effectiveness.....III-1 - III-4

Appendix IV:
CNG Compressor Station Equipment List.....IV-1 - IV-3

Appendix V:
PVEA Award Letter.....V-1 - V-2

APPENDIX I

DRAWING NO. B 95598



NOTE: APPROXIMATE WEIGHT FOR COMPRESSOR PACKAGE IS 4,000 LB

NO.	E.C.O.	DATE	BY	CHK'D	DESCRIPTION

REVISIONS

702 W. 48th Ave. Denver Colorado 80216
PHONE NUMBER: (303) 293-0055
FAX NUMBER: (303) 293-0006

MARCUM FUEL SYSTEMS INC.

MODEL # I-40AH-R
COMPRESSOR PACKAGE

DRAWN	SCALE	CHECKED	APPD. PROCESS
BLW	NONE		

CUSTOMER 94-237 NIPSCO

APPD. MECHANICAL

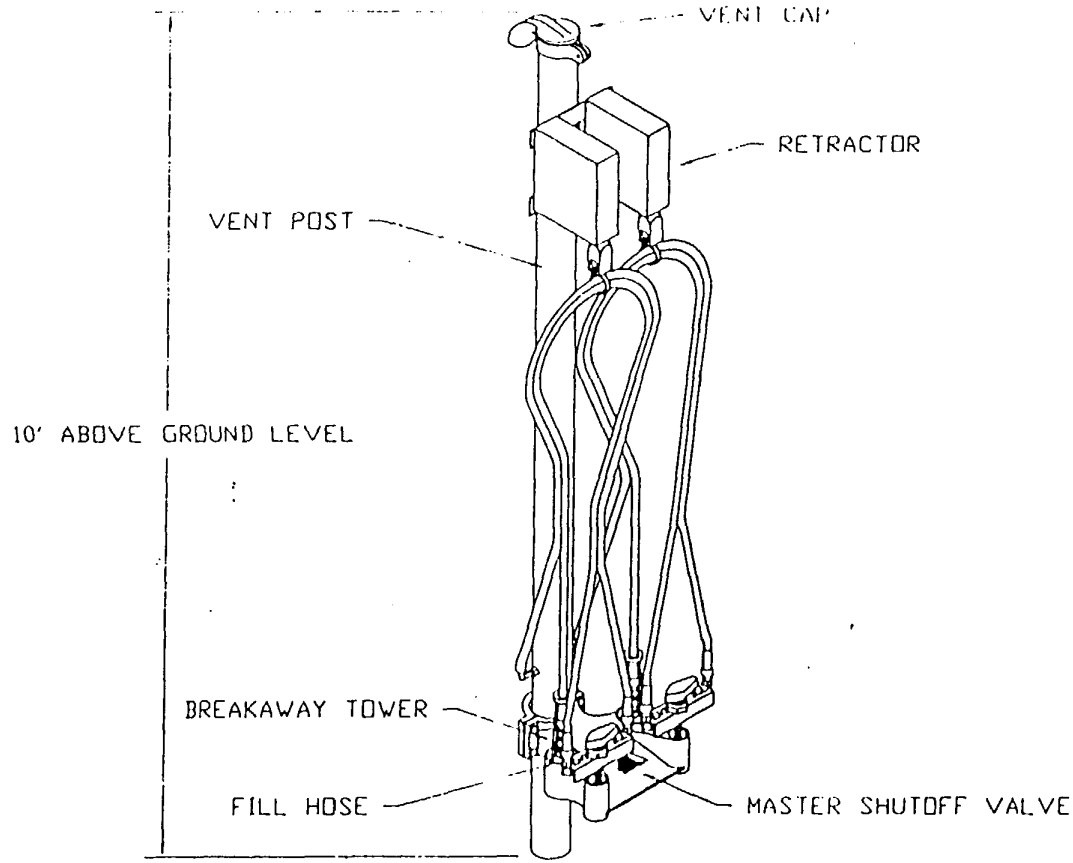
DATE DRAWN 1/12/95 | VAULT

REV. NO. | B.O.M. YES ☐ NO ☐

DRAWING NO. B 95598

SHEET: 1 OF 1

B 95145



NO.	E.C.O.	DATE	BY	CHK'D	DESCRIPTION

REVISIONS

702 W. 48th Ave. Denver Colorado 80216
PHONE NUMBER: (303) 293-0055
FAX NUMBER: (303) 293-0006

MARCUM
CNG SYSTEMS INC.

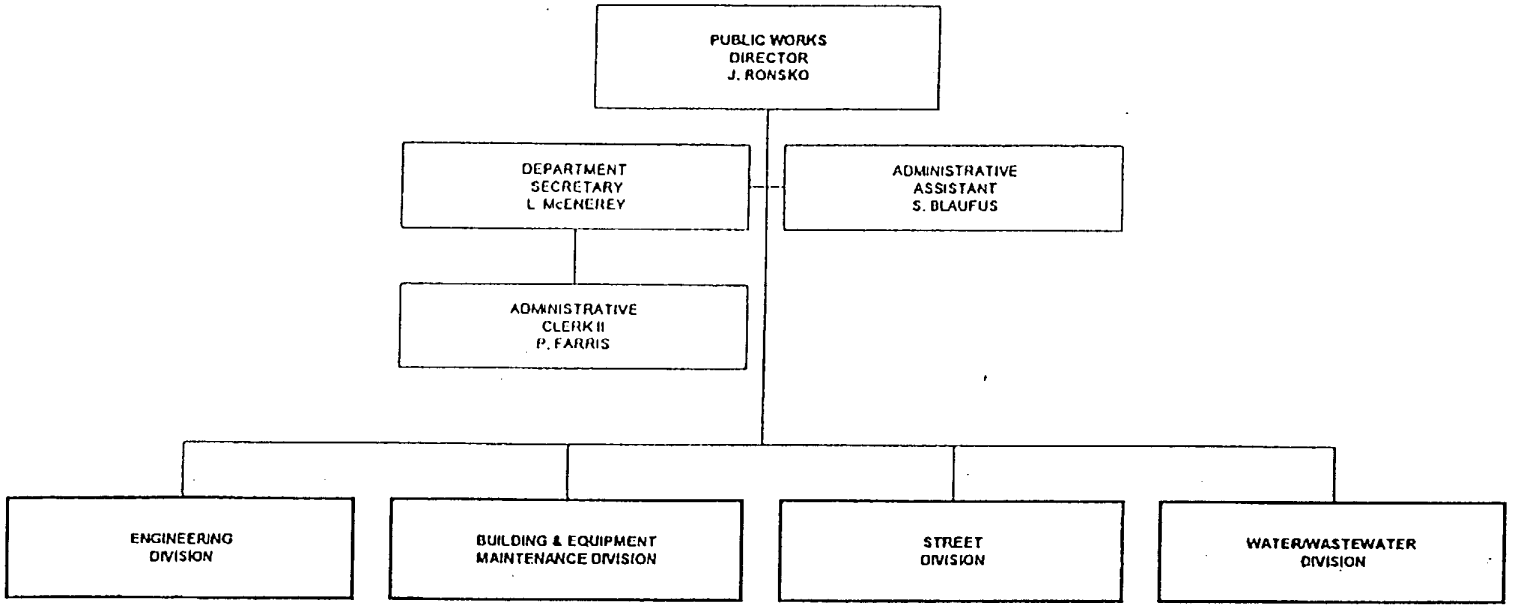
TWO-POSITION FILL POST ASSEMBLY

DRAWN DFG	SCALE NONE	CHECKED	APP'R PROCESS	DATE DRAWN 1/18/94
CUSTOMER			APP'R MECHANICAL	REV. NO. YES NO
				DRAWING NO. B 95145
				SHEET 1 OF 1

APPENDIX II

PUBLIC WORKS ADMINISTRATION ORGANIZATION

APRIL 1996

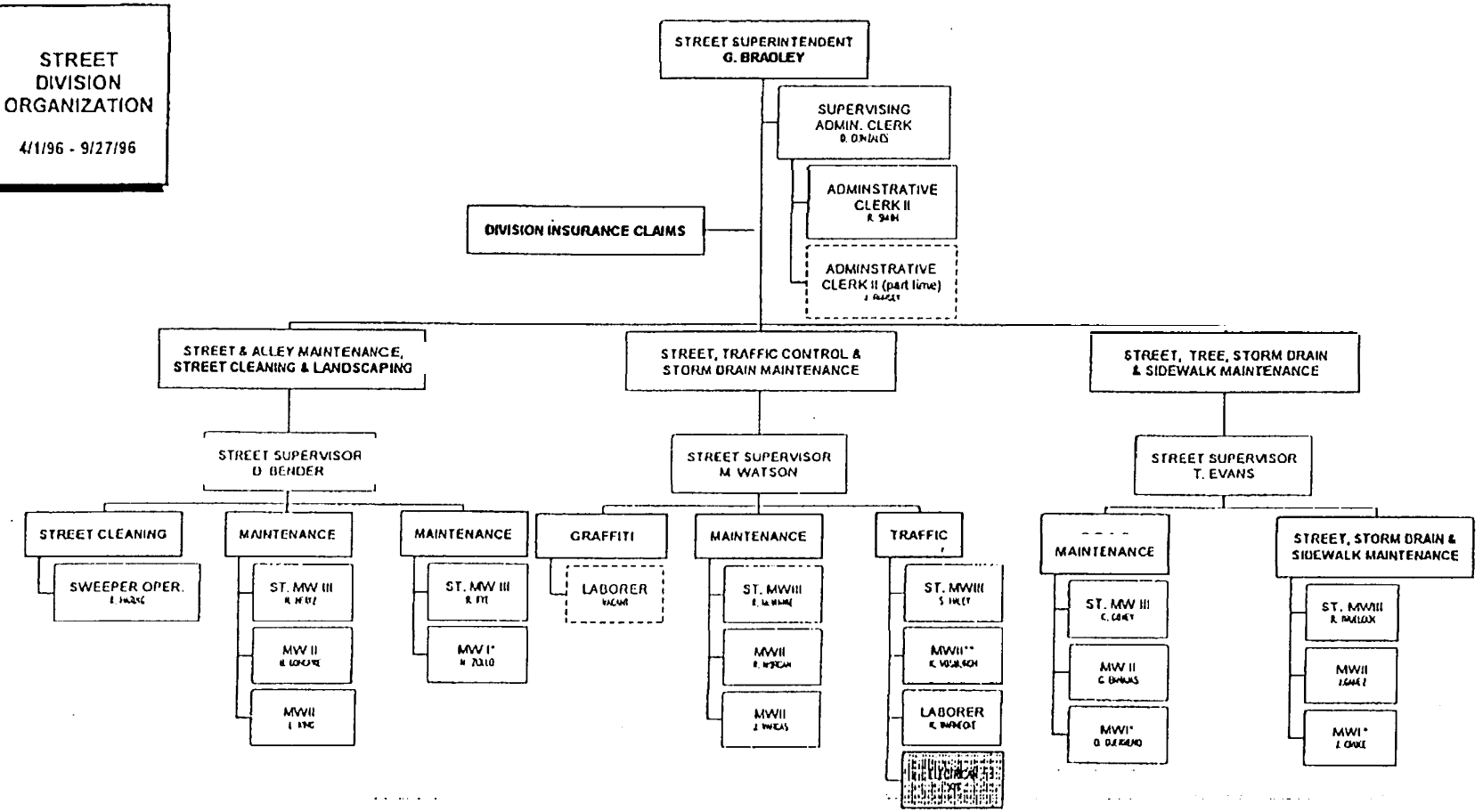


part-time

TOTAL AUTHORIZED FULL-TIME DEPARTMENT POSITIONS
86

STREET DIVISION ORGANIZATION

4/1/96 - 9/27/96



NOTES

*Adjusts between supervisors to fill workload.
**Striper

Division receives electrical and instrumentation maintenance support from the Electric Utility Dept. for traffic signals and storm pumping stations.

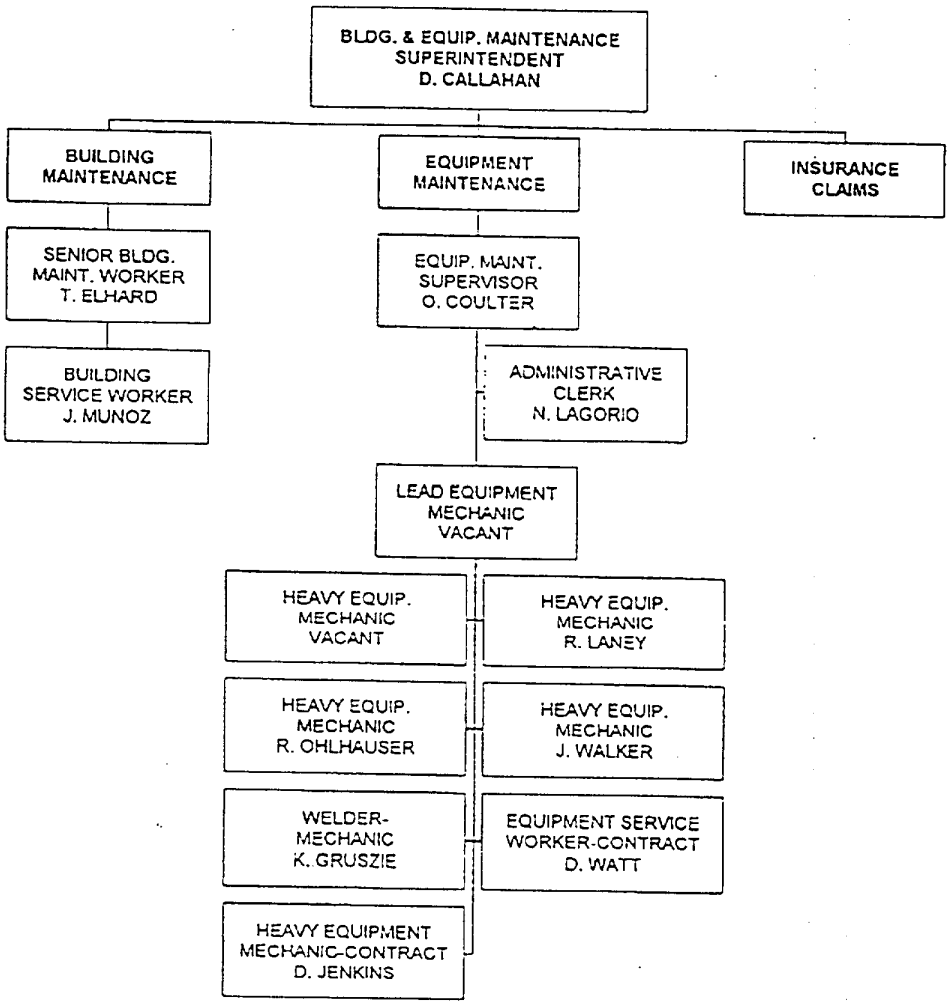
Legend

PART-TIME EMPLOYEE

ELECTRIC UTILITY EMPLOYEE

BLDG. & EQUIP. MAINTENANCE DIVISION ORGANIZATION

APRIL 1996



APPENDIX III

APPENDIX III

EMISSION BENEFITS/COST EFFECTIVENESS

GrapeLine Calculations: Based on operation of four buses, six days per week (312 days per year), making 61 trips per day each for a fleet total of 244 trips per day.
Dial-A-Ride Calculations: Based on operation of three buses, seven days per week (365 days per year), making 30 trips per day each for a fleet total 90 trips per day.

Estimated Emission Reductions
Based on the methodologies used in Table 1, Bus Emissions Factors, the following results were derived. The numbers are a result of the difference between diesel fuel and alternate fuels (such as CNG). Lodi's buses are currently gasoline-powered, not diesel; however, as gasoline factors are similar to diesel, the resulting figures for comparing diesel to CNG can also be used for comparing gasoline to CNG.

GrapeLine:

- HC and CO remain stable between diesel and alternate fuel.
- NOx: For diesel buses made between 1991-95, there is a reduction of 9.2 grams/mile from diesel to CNG:
  - ⇒ 9.2 grams/mile reduction of NOx X 160 miles traveled (per bus per day) X 4 buses = **a reduction of 5,888 grams of NOx per day.**
  - ⇒ 5,888 grams X 312 = **a reduction of 1,837,056 grams of NOx per year.**
- PM-10: For diesel buses made between 1994-95, there is a reduction of .04 grams from diesel to CNG:
  - ⇒ .04 grams/mile reduction of PM-10 X 160 miles traveled X 4 = **a reduction of 25.6 grams of PM-10 per day.**
  - ⇒ 25.6 grams X 312 = **a reduction of 7,987 grams of PM-10 per year.**

Dial-A-Ride:

- HC and CO remain stable between diesel and alternate fuel.
- NOx: For diesel buses made between 1991-95, there is a reduction of 9.2 grams/mile from diesel to CNG:
  - ⇒ 9.2 grams/mile reduction of NOx X 80 miles traveled (per bus per day) X 3 buses = **a reduction of 2,208 grams of NOx per day.**
  - ⇒ 2,208 grams X 365 = **a reduction of 805,920 grams of NOx per year.**
- PM-10: For diesel buses made between 1994-95, there is a reduction of .04 grams from diesel to CNG:
  - ⇒ .04 grams/mile reduction of PM-10 X 80 miles traveled X 3 = **a reduction of 9.6 grams of PM-10 per day.**
  - ⇒ 9.6 grams X 365 = **a reduction of 3,504 grams of PM-10 per year.**

Vehicle Miles Traveled (VMT) Reductions
The GrapeLine and Dial-A-Ride systems provides transportation to individuals who would either not make the trip or would use a car. The CNG buses to be purchased will have space for twenty

passengers, including two wheelchair passengers. Assuming only half (10) would use cars to drive an average of four miles:

GrapeLine:

- 10 passengers X 4 mile average trips = **40 VMT reductions per bus trip**
- Each bus will make approximately 61 trips per day. 40 X 61 = **2,440 VMT reductions per bus per day**
- 2,440 X 4 GrapeLine buses = **9,760 VMT reductions per day for GrapeLine fleet**
- 9,760 X 312 (operating days per year) = **3,045,120 VMT reductions per year for GrapeLine fleet**

Each GrapeLine bus travels approximately 160 miles per day:

- 160 X 4 buses = 640 miles per day traveled by GrapeLine buses;
- 640 X 312 (operating days per year) = 199,680 miles traveled per year by GrapeLine buses

Dial-A-Ride:

- 10 passengers X 4 mile average trips = **40 VMT reductions per bus trip**
- Each bus will make approximately 30 trips per day. 40 X 30 = **1,200 VMT reductions per bus per day**
- 1,200 X 3 Dial-A-Ride buses = **3,600 VMT reductions per day for Dial-A-Ride buses**
- 3,600 X 365 (operating days per year) = **1,314,000 VMT reductions per year for Dial-A-Ride buses**

Each Dial-A-Ride bus travels approximately 80 miles per day:

- 80 X 3 buses = 240 miles per day traveled by Dial-A-Ride buses;
- 240 X 365 (operating days per year) = 87,600 miles traveled per year by Dial-A-Ride buses

Vehicle Trip Reductions

Each CNG bus will have space for 20 passengers including two wheelchair passengers. Assuming only half (10) of these passengers would use cars to drive an average of four miles:

GrapeLine:

GrapeLine's four buses make 61 trips per day each, or 244 trips total per day by the fleet.

- 61 trips X 10 passengers = **610 trips per day eliminated per bus**
- 610 X 4 = **2,440 trips eliminated per day by the GrapeLine fleet**
- 2,440 X 312 = **761,280 trips eliminated per year by the GrapeLine fleet**

Dial-A-Ride:

Dial-A-Ride's three buses make 30 trips per day each, or 90 trips total per day by the fleet.

- 30 trips X 10 passengers = **300 trips per day eliminated per bus**
- 300 X 3 = **900 trips eliminated per day by the Dial-A-Ride fleet**
- 900 X 365 = **328,500 trips eliminated per year by the Dial-A-Ride fleet**

Persons Served

GrapeLine:

As the GrapeLine's four buses currently make a total of 244 trips per day (61 trips each), and the CNG buses to be purchased will be able to carry 20 passengers for each trip, a total of **4,880** (20 X 244) persons potentially will be served daily by the GrapeLine. Based on 312 days of operation per year, a total of **1,522,560** persons potentially will be served by the GrapeLine per year.

Dial-A-Ride:
As Dial-A-Ride's buses make a total of 30 trips per day each, and based on the purchase of three 20-passenger CNG buses for this system, a total of 90 trips per day will be made by the CNG buses. This will total **1,800** (20 X 90) persons potentially served daily by Dial-A-Ride. Based on 365 days of operation per year, a total of **657,000** persons potentially will be served by Dial-A-Ride per year.

Cost Effectiveness
The cost for gasoline is $1.35 per gallon; the cost for CNG is $ .32 per gallon, which is a cost savings of $1.03 per gallon. The bus tanks (either CNG or gasoline) hold 35 gallons of fuel, and are filled each day, for a cost savings of about $30 per day per bus. For GrapeLine's four buses, that will be a cost savings of $120 per day for the GrapeLine fleet. For a year's use, that will be $120 multiplied by 312 days of operation per year, for an annual cost savings of **$37,440** for GrapeLine. For Dial-A-Ride's three buses, there will be a cost savings of $90 per day for the Dial-A-Ride buses. For a year's use, that will be $90 multiplied by 365 days of operation per year, for an annual cost savings of **$32,850** for Dial-A-Ride. Total yearly cost savings for both will be **$70,290**.

Air Quality Benefits
As this project qualifies as a Project Type 4, Transportation Management Organizations/ Associations (TMOs/TMAs), the following is a quantitative analysis of this project based on Project Type 4 emission reduction calculations. Average auto emission factors (auto trip end emission factor and VMT emission factor) are from Table 3.

GrapeLine:

- For ROG emissions: (for project life of 11-15 Years)

(2,440 auto trips removed per day) X (3.65) = 8,906
+
(2,440) X (average commute trip length: 4 miles) X (.39) = 3,806.4

= 12,712.4 grams reduction of ROG auto emissions per day;
3,966,268.8 grams per year

- For NOx emissions: (for project life of 11-15 Years)

(2,440) X (1.84) = 4,489.6
+
(2,440) X (4 miles) X (.52) = 5,075.2

= 9,564.8 grams reduction of NOx auto emissions per day;

2,984,217.6 grams per year

- For PM-10 emissions: (for project life of 11-15 Years)

Auto trip end emission factor is not available for PM-10, therefore calculations cannot be made.

- For CO emissions: (for project life of 11-15 Years)

(2,440) X (38.3) = 93,452
+
(2,440) X (4 miles) X (3.23) =31,524.8

= 124,976.8 grams reduction of CO auto emissions per day;
38,992,761.6 grams per year

Dial-A-Ride:

- For ROG emissions: (for project life of 11-15 Years)

(900 auto trips removed per day) X (3.65) = 3,285
+
(900) X (average commute trip length: 4 miles) X (.39) = 1,404

= 4,689 grams reduction of ROG auto emissions per day;
1,711,485 grams per year

- For NOx emissions: (for project life of 11-15 Years)

(900) X (1.84) = 1,656
+
(900) X (4 miles) X (.52) = 1,872

= 3,528 grams reduction of NOx auto emissions per day;
1,189,170 grams per year

- For PM-10 emissions: (for project life of 11-15 Years)

Auto trip end emission factor is not available for PM-10, therefore calculations cannot be made.

- For CO emissions: (for project life of 11-15 Years)

(900) X (38.3) = 34,470
+
(900) X (4 miles) X (3.23) =11,628

= 46,098 grams reduction of CO auto emissions per day;
16,825,770 per year

APPENDIX IV

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To Julie	From Kirk Evans
Co. GGW&C	Co. City of Lodi
Dept.	Phone # (209) 333-6700 x590
Fax # (510) 832-1325	Fax #

Marcum Fuel Systems, Inc.
702 W. 48th Ave., Suite A
Denver, Colorado 80216
Phone: (303) 296-9666
Fax (303) 296-9664

MARCUM

EQUIPMENT QUOTATION
96-2011
PACIFIC GAS & ELECTRIC COMPANY
BUS FLEET
January 21, 1996

Marcum Fuel Systems Inc. proposes to supply the following quality NGV equipment consisting of the following components:

One (1)	Ingersoll Rand Model 20H40NG CNG Compressor, rated for 57 cfm at 20 psig suction and 4500 psig discharge pressure. The compressor has air cooled, lubricated cylinders and is a four stage, single-acting type. The compressor also has air cooled intercoolers, aftercoolers and moisture separators for the second, third, and fourth stage coolers.
One (1)	Pressure gauge and a pressure relief valve for each stage of compression mounted on the compressor.
One (1)	Crankcase pressure gauge, crankcase pressure relief valve, and crankcase bleed mounted on the compressor.
One (1)	Thermostatically controlled, 120 volt, crankcase heater for the compressor.
One (1)	Crankcase oil level switch for the compressor, 120 volt.
One (1)	Totally enclosed explosion proof (TEXP) electric motor, 40 HP, 460 volt, 3 phase, 60 cycles with 1.15 service factor.
One (1)	V-Belt drive with beltguard.
One (1)	Inlet pulsation bottle with baffles.
One (1)	Inlet pressure gauge mounted on the compressor.
One (1)	Set of pressure gauges, locally mounted.
One (1)	Suction filter, sized for 60 cfm flow rate.

One (1) Discharge coalescing filter, sized for 60 cfm flow rate.

One (1) Discharge check valve.

One (1) Shutoff valve to isolate the compressor. It will be 1/4" NPT quarter turn shut off type.

One (1) High/low suction gas pressure switch.

One (1) High discharge gas pressure switch

One (1) Electrical control panel. The control panel which utilizes relay logic will have the following shutdowns:

a. High/low suction gas pressure.
b. Final discharge gas pressure.
c. Compressor oil level.
d. Motor overloads for the motor.

The control panel will have one Hand-Off-Auto switch, one size 3 motor starter, one hourmeter, one start pushbutton, one reset pushbutton, and one emergency stop "mushroom type" pushbutton. The control panel will have a window to view the indicating lights for fault malfunction for high suction gas pressure, low suction gas pressure, high gas temperature (optional), and low oil level. There are also green indicating lights for solenoid valve open and pressure demand to indicate the compressor is running and compressing gas. The size 3 NEMA rated starter offers the flexibility to operate with either 230 or 460 voltage. The control panel will also have a transformer to reduce the incoming voltage to 110 volts for control voltage.

One (1) Back pressure regulator

One (1) Natural gas recovery system with 60 gallon ASME recapture tank rated for 150 psig working pressure. The system will have a regulator capable of reducing the tank pressure from 150 psig to 1 psig above the inlet gas pressure. The compressor will have a blowdown solenoid valve, dragon valve, and check valves for the second, third, and fourth stage moisture separators. Also the natural gas recovery system will have a pressure gauge indicating

the regulator setting, a pressure gauge indicating tank pressure, condensate drain valve, and a pressure relief valve.

One (1) Emergency shutdown (ESD) system designed to shut off the flow of gas from the compressor to the fill post assembly. The shut off valve will be incorporated into the package. The relays required for the ESD system will be installed on the compressor control panel. This will allow the ESD system to shut off the compressor motor and inlet solenoid valve incorporated into the compressor package. One ESD switch will be installed on the compressor control panel. The remote ESD switch shall be installed by the customer in a non-hazardous area. The remote ESD switch will be shipped loose.

One (1) Hi - Flo Dome Load for slow fill and one reference tube mounted on an aluminum back panel. The panel is designed for 4,000 psig MAWP and a maximum flow rate of 600 cfm. The dome load valve will have a reference tube to allow for temperature compensated NGV fueling. There will be two pressure gauges, one for reference pressure and one for vehicle pressure

One (1) Steel skid with all previously listed components, mounted, piped, and wired. The skid will be wired to a Class 1, Group D, Division 2 electrical classification. All electrical components designed for non hazardous areas shall be installed at least 15 feet from all NGV equipment and 20 feet from the dispenser. The skid will be painted with a primer coat and a top coat of dark green enamel.

Three (3) Marcum's Double Position Fill Post Assembly which can be utilized for either fast fill or time fill refueling. Each fill post assembly comes standard with two retractors, two break-away towers, two 18' siamese conductive hoses for NGV fueling and venting, two Whitey three-way fill/vent valve, two NGV-1 fuel disconnect, and one aluminum casting molded to store the refueling disconnects when they are not being used. The fill post assembly is designed for a maximum operating pressure of 3600 psig. Each siamese hose will have a pressure rating of 5000 psig and will be connected to the three-way valve via 1/4" NPT fittings.

One (1) Start up and training services of the listed equipment. The services quoted are for 3 days which allows one day travel time. For services required beyond the three days quoted, our rates will be billed per our serviceman's rate sheet. The start up should require one to two days.

APPENDIX V

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

CALIFORNIA ENERGY COMMISSION
CHARLES R. IMBRECHT
Chairman

December 15, 1995

The Honorable Michael Machado
Member, State Assembly
State Capitol, Room 5150
Sacramento, CA 95814

Dear Assemblyman Machado:

This is to congratulate you for successfully obtaining an appropriation of $95,000 through the California Energy Commission (Commission) from AB 1671 (Katz, Chapter 980), for the City of Lodi. This appropriation was made from the Petroleum Violation Escrow Account (PVEA) for the purpose of Conversion of buses to CNG.

As you may be aware, AB 1671 is not "operative" until the passage of AB 285 (Hauser), which appropriates funds in a geothermal account for a project in Lake County. However, we are proceeding with the implementation of AB 1671 in anticipation of the imminent passage of AB 285.

PVEA funds are the result of legal settlements arising from oil price fixing in the 1970s. These funds are administered by the federal Department of Energy (DOE), subject to two general criteria. One, the project must be restitutionary in nature (repaying the people who were overcharged) and two, the project must realize identifiable energy savings. Because of legal and federal constraints on PVEA funds, each proposed project must be approved by DOE. In addition, state law requires that a contract be executed between the Commission and the City of Lodi (the project proponent) before funds can be released.

The Commission has extensive expertise in negotiating with DOE for PVEA approvals. However, because of the specialized nature of the above appropriation, we will need the assistance of the City of Lodi in drafting the justification for PVEA funding. Commission staff have already contacted the City of Lodi in order to expedite the approval process. This letter, which has been copied and sent to Mr. Kirk J. Evans, Assistant to the City Manager, City of Lodi, includes the complete schedule and staff contacts for the appropriation process.

1516 Ninth Street, Sacramento, California 95814-5512
(916) 654-5000
FAX: (916) 654-4420

Susan Aronhalt, of the Commission's Grants and Loans Office, will be coordinating the submittal of the state plans to DOE. If there are any questions regarding the approval process or preparing the project proposal, please call her at (916) 654-4202. If you have any other questions about energy policies or programs, please call me at (916) 654-5000.

Sincerely,

CHARLES R. IMBRECHT
Chairman

cc: Mr. Kirk J. Evans, Assistant to the City Manager (with Enclosures)
City of Lodi
City Hall, 221 West Pine Street
P.O. Box 3006
Lodi, CA 95241-1910